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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,876	10/11/2001	Hirofumi Kawashima	S002-4864	9675

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EXAMINER

ADDISON, KAREN B

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/975,876	KAWASHIMA, HIROFUMI	
	Examiner	Art Unit	
	Karen B Addison	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 10, 27 and 39-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10, 27, 47-60 is/are allowed.
- 6) ☒ Claim(s) 1, 39-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. Claims 10, 27, 47-60 are allowed.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 39-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Debely(4384232).

Debely discloses a quartz crystal resonator capable of vibrating in a flexural mode in fig. 1-3 and 6 comprising: a plurality of quartz crystal tuning fork tines undergoing vibration in an inverse phase, each of the quartz crystal tuning fork tines (33,34) having a first main surface, each of the first and second main surface opposite the first main surface, each of the first and second main surfaces having a central linear portion. Debely also discloses a quartz crystal tuning fork to which the quartz crystal tuning fork tines are attached and at least one groove (35) in the central linear portion of each of the first and second main surfaces of each of the quartz crystal tuning fork tines have a groove in the central linear portion of the first and second main surfaces of each of the quartz crystal tuning fork tines being greater than or equal to a distance in the width direction of the groove measured from an outer edge of the groove to an outer edge of the tuning fork (fig.2 and 3 and 6) wherein; the grooves in the first and second main surfaces of each of

the first and second quartz crystal tuning fork tines are disposed opposite to each other in a thickness direction of first and second quartz crystal tuning fork tines. Debely also discloses side surfaces on the first and second tuning fork tines wherein; a plurality of first electrodes (39 and 43) each disposed in a respective groove of the first and second quartz crystal tuning fork tines and the second electrodes of each the first and second tuning fork have an electrical polarity opposite to an electrical polarity of the first electrodes of each of the quartz crystal tuning fork tines wherein the second electrode define a second terminal. Debely also discloses, a quartz crystal tuning fork resonator in fig.1-4 and 5 wherein; two of the side surfaces of each of the first and second quartz crystal tuning fork tines comprises an inner side surface and an outer side surface opposite the inner side surface wherein; a direct current voltage is applied between the first and second electrode terminals, in a direction of an inner electric field generated between the second electrode disposed on the inner side of the first quartz crystal tuning fork tine. Debely also disclose a first electrode (39 disposed in one of the grooves (fig.6) opposite to the second electrode (43) disposed on the inner side of the first quartz crystal tuning fork tine located in the same direction of the inner electric field generated between the second electrode disposed on the inner side of the second quartz crystal tuning fork tine and the first electrode disposed in one of the grooves opposite to the second electrode disposed on the inner side of the second quartz crystal tuning fork tine, and a direction of an outer electric field generated between a second electrode disposed on the outer side of the first tuning quartz crystal fork tine and the first electrode disposed in one of the grooves opposite to the second electrode disposed

on the outer side of the first quartz wherein; the directions of the inner and outer electric fields of the first and second quartz crystal tuning fork tines are generally along an x-axis direction of the quartz crystal tuning form resonator and there is no electric field generated between first electrodes disposed in opposite grooves of the first and second quartz crystal tuning fork tines when the direct current voltage is applied between the first and second electrode terminals. Delby also disclose the tuning fork the inner and outer sides of the first and second quartz crystal tuning fork tines undergo simultaneous deformation in opposite directions along a longitudinal axis of the first and second quartz crystal tuning fork tines wherein the alternating current voltage is applied between the first and second electrode terminals, wherein the first and second quartz crystal tuning fork undergo vibration in a flexural mode of an inverse phase.

#### ***Response to Arguments***

4. Applicant's arguments filed 9/15/03 have been fully considered but they are not persuasive.

In response to the applicants argument that Debely does not disclose or describe the structural combination of at least one groove formed in the central linear portion of each of the first and second main surfaces of each of the crystal tuning forks tines and the width of the groove in the central linear portion of on of the first and second main surfaces of each of the quartz crystal tuning fork tines is greater than or equal the distance in the width direction of the groove measured from and outer edge of the groove to an outer edge of the tuning fork tine is noted.

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However, Debely clearly shows in fig.2—4 and 6 a tuning fork having at least one groove (35) formed in the central linear portion of each of the first and second main surfaces (33,34) of each of the crystal tuning forks tines and the width of the groove in the central linear portion of on of the first and second main surfaces of each of the quartz crystal tuning fork tines is greater than or equal the distance in the width direction of the groove measured from and outer edge of the groove to an outer edge of the tuning fork tine.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen B Addison whose telephone number is 703-306-5855. The examiner can normally be reached on 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1317. The fax phone number for the organization where this application or proceeding is assigned is 703-305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

KBA

1/6/04



BURTON S. MULLINS  
PRIMARY EXAMINER